2.4.4.5.1.3.2 Verification of Self-Assigned Temporary Address of Transmitting Aircraft (§2.2.4.5.1.3.2)

Purpose/Introduction:

An "ADDRESS QUALIFIER" value of ONE (binary 001) **shall** indicate that the message is an ADS-B Message from an aircraft that is not receiving ATC services, and that the "ADDRESS" field holds the transmitting aircraft's self-assigned ownship temporary address. An "ADDRESS QUALIFIER" value of ONE **shall not** be used when the "Receiving ATC Services Flag" (§2.2.4.5.4.13.3) is set to ONE, indicating that the Participant is receiving ATC services.

The self-assigned temporary address **shall** be generated as follows:

Let:

$ADDR_P$	=	the ICAO 24-bit address that has been assigned to the aircraft;
$ADDR_T$	=	the temporary address that is to be generated;
M(1)	=	the 12 least significant bits (LSBs) of the ownship "LATITUDE" field (per §2.2.4.5.2.1) at the time the temporary address option is selected;
M(2)	=	the 12 least significant bits (LSBs) of the ownship "LONGITUDE" field (per §2.2.4.5.2.1) at the time the temporary address option is selected;
M(3)	=	$4096 \times M(1) + M(2)$; and
TIME	=	the number of seconds that have elapsed since UTC midnight at the time the temporary address option is selected, represented as a 24-bit number.

Also, let "⊕" denote the modulo 2 bit-by-bit addition (or "exclusive OR") operation.

a. If the transmitting aircraft's ICAO 24-bit address $ADDR_P$ is available, then the temporary address $ADDR_T$ **shall** be the modulo 2, bit-by-bit summation of the permanent address and M(3), that is:

$$ADDR_T = ADDR_P \oplus M(3).$$

b. If the aircraft's 24-bit ICAO address $ADDR_P$ is not available, then time of day **shall** be used as an additional randomizer. In that case, the temporary address $ADDR_T$ **shall** be the modulo 2, bit-by-bit summation of TIME and M(3), that is,

$$ADDR_T = TIME \oplus M(3).$$

Measurement Procedure:

Step 1: Establish Initial Conditions

Set up the ADS-B Transmitting Subsystem to transmit UAT messages.

Step 2: Verify the Encoded Data when the ICAO 24-bit Address is Available

Via the appropriate interface, provide the UUT with the exact Latitude, Longitude and $ADDR_P$ data provided in Table 2-76 and set the Address Selection (ICAO vs Temporary) to Temporary.

For each input Latitude and Longitude, verify the output "ADDRESS" field holds the exact 24-bit value in the $ADDR_T$ column in Table 2-76.

Table 2-76: Temporary Addresses with ICAO 24-bit Address

Latitude	Longitude	M(1)	M(2)	M(3)	$ADDR_P$	$ADDR_T$
234567	155555	567	555	567555	123456	444103
0AF3C4	097DB0	3C4	DB0	3C4DB0	030562	3F48D2
378536	214C37	536	C37	536C37	155555	463962
14C208	1553CA	208	3CA	2083CA	391122	1992E8
295AF6	047D5B	AF6	D5B	AF6D5B	E1E1E1	4E8CBA
0C3B98	22C97A	B98	97A	B9897A	FAA123	432859
123099	304532	099	532	099532	2E6A53	27FF61
3FFFFF	000001	FFF	001	FFF001	9F2BA6	60DBA7
044C64	211853	C64	853	C64853	B2C5A0	748DF3
1379A4	23F786	9A4	786	9A4786	D3C975	498EF3
11AE25	079F6C	E25	F6C	E25F6C	C47A3C	262550
247F01	395888	F01	888	F01888	A77130	5769B8
33A042	2FC9FB	042	9FB	0429FB	6431A6	60185D
006FAB	123543	FAB	543	FAB543	40AE48	BA1B0B
197605	0FF41F	605	41F	60541F	59562E	390231

Step3: Verify the Encoded Data when the ICAO 24-bit Address is **not** Available

Via the appropriate interface, provide the UUT with the exact Latitude and Longitude data provided in Table 2-77 and set the Address Selection (ICAO versus Temporary) to Temporary.

For each input Latitude and Longitude, verify the output "ADDRESS" field holds the exact 24-bit value in the $ADDR_T$ column in Table 2-77.

Table 2-77: Temporary Addresses without ICAO 24-bit Address

Latitude	Longitude	M(1)	M(2)	M(3)	Time	$ADDR_T$
234567	155555	567	555	567555	007E90	560BC5
0AF3C4	097DB0	3C4	DB0	3C4DB0	00E880	3CA530
378536	214C37	536	C37	536C37	014370	522F47
14C208	1553CA	208	3CA	2083CA	010A47	21898D
295AF6	047D5B	AF6	D5B	AF6D5B	00A1ED	AFCCB6
0C3B98	22C97A	B98	97A	B9897A	00301F	B9B965
123099	304532	099	532	099532	002D5A	09B868
3FFFFF	000001	FFF	001	FFF001	012A65	FEDA64
044C64	211853	C64	853	C64853	010101	C74952
1379A4	23F786	9A4	786	9A4786	0015E6	9A5260
11AE25	079F6C	E25	F6C	E25F6C	0109EA	E35686
247F01	395888	F01	888	F01888	00FACE	F0E246
33A042	2FC9FB	042	9FB	0429FB	000158	0428A3
006FAB	123543	FAB	543	FAB543	0019E6	FAACA5
197605	0FF41F	605	41F	60541F	00E430	60B02F

Step 4: Verify Self-Assigned Address only when Not Receiving ATC Services

Via the appropriate interface, set the "Receiving ATC Services Flag (§2.2.4.5.4.13.3) to ONE (1) and set the Address Selection Input to Temporary. Verify that the resultant ADDRESS QUALIFIER value is still set to ZERO (binary 000).